IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Appellants:	Confirmation No.: 1609
Douglas LOVE et al.	Group Art Unit: 2609
Serial Number: 10/734,613	Examiner: Abdi AMARA
Filed: December 12, 2003	Attorney Docket No.: 031190-00001

For: SYSTEM AND METHOD FOR CODING AND RETRIEVAL OF A CAD DRAWING FROM A DATABASE

AMENDED APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: April 27, 2009

Sir:

Further to the Appeal Brief timely filed February 24, 2009, and in response to the Notice of Non-Compliant Appeal Brief mailed March 25, 2009, entry of the following Amended Appeal Brief is requested.

Please charge any fee that may be due with respect to this paper to Deposit Account No. 01-2300, referencing Attorney Docket No. 031190-00001.

TABLE OF CONTENTS

I.   INTRODUCTION

This is an appeal from the Final Office Action dated July 22, 2008 (hereinafter "Final Office Action") in which claims 1, 20, 23, 40, 49 and 54 were rejected under 35 U.S.C. §112, first paragraph, claims 1-5, 7-10, 13-29, 32-43 and 49-55 were rejected 35 U.S.C. § 103(a), claims 6, 11, 12, 30 and 31 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, and claims 47 and 48 were allowed.

II.   REAL PARTY IN INTEREST

The real party in interest in the present application is Aston University, a British corporation, as evidenced by the assignment recorded at the United States Patent and Trademark Office on August 10, 2004 at Reel 015663, Frame 0360.

III.   RELATED APPEALS AND INTERFERENCES

The Appellants, Appellants' legal representative, and assignees are not aware of any related appeals or interferences that will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

IV.   STATUS OF CLAIMS

Claims 1-43 and 47-55 are pending. Claims 44-46 are withdrawn. Claims 47 and 48 are allowed. Claims 6, 11, 12, 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Claims 1-5, 7-10, 13-29, 32-43 and 49-55 are rejected and are being appealed. A copy of the claims under appeal is presented in Appendix I.

V.   STATUS OF AMENDMENTS

The amendments submitted on September 22, 2008 in reply to the Final Office Action have not been entered. The instant Appeal Brief is based upon the claims as finally rejected.

VI.   SUMMARY OF THE CLAIMED SUBJECT MATTER

The subject matter of independent claims 1, 20, 23, 49 and 54 and associated dependent claims is directed to coding a view in a CAD drawing into a format different from the CAD drawing (see Specification, as published, at paragraph 78 and Figs. 2 and 3). The CAD drawing may be a 2- or 3-dimensional CAD drawing (see Specification at paragraphs 126 and 127). As recited in the independent claims, the CAD drawing may be first filtered to temporarily remove extraneous material therefrom (see Specification at paragraphs 82 and 94-96, and Figs. 3 and 7). A view in the CAD drawing for coding is then identified (see Specification at paragraph 78 and Figs. 9a, b and 10a, b, c). A feature of the view is then identified, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve (see Specification at paragraph 84 and Fig. 5). Next, properties of the feature from the CAD drawing are extracted, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing (see Specification at paragraph 80 and Fig. 3). Then, code bits representative of the extracted vector properties are generated (see Specification at paragraphs 78 and 88, and Fig. 2). The generated code bits are then added to a view code for the view, wherein the view code is a coded version of the view in a different format (see Specification at paragraph 78 and Figs. 2 and 11). Finally, the view code is stored in a database (see Specification at paragraph 79 and Fig. 2).

The subject matter of independent claims 40, 53 and 55 and associated dependent claims is directed to selecting a coded CAD drawing for retrieval from a stored database of drawings (see Specification at paragraphs 97-102 and Fig. 8). As recited in the independent claims, a CAD source drawing comprising a source view is produced (see Specification at paragraph 98 and Fig. 8). Then, a feature of the source view is identified, wherein the feature comprises a graphic entity or a group of graphic entities (see Specification at paragraphs 84 and 98, and Figs.

5 and 8). Next, properties of the feature are extracted from the CAD source drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities (see Specification at paragraphs 80 and 98, and Figs. 3 and 8) Then, code bits representative of the extracted properties are generated (see Specification at paragraphs 78, 88 and 98, and Figs. 2 and 8). The generated code bits are added to a source view code for the source view (see Specification at paragraphs 78 and 98, and Figs. 2, 8 and 11). The source view code is then compared with each of a plurality of stored view codes and a similarity index is calculated for each stored view code (see Specification at paragraph 99 and Fig. 8). A list of drawings arranged based on the similarity index of their respective view codes is displayed to a user (see Specification at paragraph 100 and Fig. 8), so that the user may select for retrieval from the database the desired drawing (see Specification at paragraph 101 and Fig. 8).

VII.   GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A.   Whether claims 1, 20, 23, 40, 49 and 54 fail to comply with the written description requirement under 35 U.S.C. §112, first paragraph.

B.   Whether claims 1-3, 7, 17-26, 36-39, 49-52 and 54 are unpatentable under 35 U.S.C. § 103(a) over Yamamoto (US Appl. Pub. 2001/0043236) in view of Agnes et al. (US Pat. 6,918,095) and Beatty et al. (US Appl. Pub. 2004/0049307).

C.   Whether claim 4 is unpatentable under 35 U.S.C. § 103(a) over Yamamoto, Agnes and Beatty, as applied to claim 1, and further in view of Tally et al. (US Pat. 6,918,092) and Naka et al. (US Pat. 5,583,975).

D.   Whether claim 5 is unpatentable under 35 U.S.C. §103(a) over Yamamoto, Agnes, Beatty, Tally, Naka, as applied to claim 4, and further in view of Takahashi et al. (US Pat. 6,256,417).

E.   Whether claims 8-9 and 27-28 are unpatentable under 35 U.S.C. § 103(a) over Yamamoto, Agnes, Beatty, as applied to claims 7 and 23, and further in view of Ajima et al. (US Pat. 5,390,199).

F.   Whether claims 10 and 29 are unpatentable under 35 U.S.C. § 103(a) over Yamamoto, Agnes, Beatty and Ajima, as applied to claims 9 and 28, and further

in view of Bloomfield et al. (US Appl. Pub. 2001/0036322).

G.   Whether claims 13-16 and 32-35 are unpatentable under 35 U.S.C. § 103(a) over Yamamoto, Agnes, Beatty, as applied to claim 1, and further in view of Inoue et al. (US Appl. Pub. 2003/0149780).

H.   Whether claims 40-43 are unpatentable under 35 U.S.C. § 103(a) over Yamamoto in view of Inoue and Ajima.

I.   Whether claims 53 and 55 are unpatentable under 35 U.S.C. § 103(a) over Yamamoto in view of Beatty.

VIII.   ARGUMENT

A.   Claim Rejections under 35 U.S.C. §112

1. Legal Standard

35 U.S.C. §112, first paragraph, recites:

> The Specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

During the evaluation of the requirements under 35 U.S.C. §112, first paragraph, the court in *In re Wertheim*, 541 F.2d 257, 191 U.S.P.Q. 90 (C.C.P.A. 1976) held that "[t]he primary consideration is *factual* and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure." *Wertheim*, 191 U.S.P.Q. at 91 (emphasis in original).

The Appellants respectfully submit that the Examiner has not made a proper *prima facie* rejection under 35 U.S.C. §112, because the claimed features are supported by the Specification.

2. Claims 1, 20, 23, 40, 49 and 54 comply with the written description requirement

Claims 1, 20, 23, 40, 49 and 54 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. In particular, the Examiner alleges that the claim limitations of "encoding ... into format different from the CAD drawing" and "wherein the view code is encoded version of the view in a different format" were not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention (see Final Office Action at p. 3-6, item 5).

The Appellants respectfully submit that the Specification does indeed provide support for these claimed features. First, in response to the Examiner's allegation that there is no support for term "encoding" in the specification, pending claims were amended in Appellants response to the Final Office Action to recite term "coding". Second, in response to the Examiner's allegation that there is no support for the limitation of "encoding ... into a format different from the CAD drawing" and "wherein the view code is encoded version of the view in a different format," Appellants submit that it is immediately clear to the one of ordinary skill in the art on reading the Specification that the data is not stored in the original CAD format, which would indeed defeat the purpose of the invention.

It is inherent from the wording "coding a CAD drawing" itself that the result is not merely CAD code using the Examiner's definition of coding as "putting in or into form or symbols of a code" (see Final Office Action at p. 3, item 3). If a device was simply to leave the drawings in the CAD format then it would not have been "put into" symbols of code it would simply be kept in the original CAD code.

There are several instances of where this change of format is apparent; for example, paragraph 17 of the Specification discloses:

> The term "code bits" as used herein is intended to refer to any element of a code which is used in a coding system to represent an item or property value of an object which is being coded. Thus, a code bit may be a bit (binary digit) in a digital code as used, for example, in a preferred embodiment, or it may be some other

element such as a numeric or alphabetic character, depending on
the particular coding system employed.

It is apparent from this disclose that many types of coding formats may be used which are
different from the original CAD drawing format.

Paragraph 73 of the Specification describes that databases of CAD drawings require time
and effort to search and that instead the "information about the drawing needs to be in a format
which facilitates a quick and efficient comparison". Accordingly, it is clear that the result of the
coding should not in the same format as the original CAD drawing (which is difficult to search)
but in a different format (which is easier to search).

Paragraph 78 of the Specification describes how the coding of the entities may vary as
follows:

> At step 104 a determination is made of a code structure which is to
> be used to assign code bits to the properties of each entity. The
> code structure may be different for different classes of drawing.
> For example one class of drawing may be electrical circuit
> diagrams, which would have a different code structure to, say,
> engineering component drawings. The code structure may be
> different for different types of property (e.g. different code
> structures for line lengths and radii of circles).

Again, the coding structure (i.e., format) is disclosed to be variable and therefore different from
the original CAD drawing format.

Based on the above, Appellants submit that there is sufficient support in the Specification
for one of ordinary skill in the art to understand that CAD drawings are coded into a format
different from the original CAD drawing format as recited in claims 1 20, 23, 40, 49 and 54 of
the present application. Accordingly, withdrawal of the 35 U.S.C. §112, first paragraph, claim
rejections is respectfully requested.

B.   Claim Rejections under 35 U.S.C. §103

1. Legal Standard

When rejecting claims under 35 U.S.C. §103, the Examiner bears the initial burden of presenting a *prima facie* case of obviousness. If the Examiner fails to establish a *prima facie* case, the rejection is improper and will be overturned. See *In re Rijckaert*, 9 F.3d 1531, 28 U.S.P.Q. 2d. 1955 (Fed. Cir. 1993). "If examination.... does not produce a prima facie case of unpatentability, then without more the Appellant is entitled to the grant of the patent." *In re Oetiker*, 977 F.2d 1443, 1445-1446, 24 U.S.P.Q.2d. 1443, 1444 (Fed. Cir. 1992).

The Appellants respectfully submit that the specific factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 117, 148 U.S.P.Q. 459 (1966), have not been considered or properly applied by the Examiner. Particularly, the differences between the references and the claims were not properly determined. Therefore, the rejection is improper, and should be withdrawn.

Several basic factual inquiries must be made to determine obviousness or non-obviousness of patent application claims under 35 U.S.C. § 103. These factual inquiries are set forth in *Graham*:

> Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; the level of ordinary skill in the pertinent art resolved. Against this backdrop, the obviousness or non-obviousness of the subject matter is determined.

Graham v. John Deere Co., 383 U.S. 1, 18 (1966).

The Appellants respectfully submit that the Examiner has not made a proper *prima facie* rejection under 35 U.S.C. §103, because the alleged combination of cited prior art references fails to teach or suggest all the features of the present invention as claimed.

2. Claims 1-3, 7, 17-26, 36-39, 49-52 and 54 are patentable over the prior art

Claims 1-3, 7, 17-26, 36-39, 49-52 and 54 stand finally rejected under 35 U.S.C. § 103(a) over Yamamoto in view of Agnes and Beatty. Appellants respectfully submit that independent claims 1, 20, 23, 49 and 54 and associated dependent claims are patentable over the cited

references for the reasons set forth below. For convenience, only representative independent claim 1 is reproduced and will be discussed in detail herein. Independent claims 20, 23, 49 and 54 recite substantially similar subject matter as the representative claim 1, and are, thus, patentable over the cited references for substantially similar reasons as claim 1. Claims dependent on claims 1, 20, 23, 49 and 54 incorporate the subject matter of their respective base claims and are patentable for the same reasons as their respective base claims.

Claim 1 is directed to a method of coding a view in a 2-dimensional CAD drawing into a format different from the 2-dimensional CAD drawing, the method comprising:

> a) filtering the drawing to temporarily remove extraneous material therefrom;
>
> b) identifying a view in the 2-dimensional CAD drawing for coding;
>
> c) identifying a feature of the view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;
>
> d) extracting properties of the feature from the CAD drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;
>
> e) generating code bits, wherein the code bits are representative of the extracted vector properties;
>
> f) adding the generated code bits to a view code for the view, wherein the view code is a coded version of the view in a different format; and
>
> g) storing the view code.

Appellants submit that Yamamoto, Agnes, Beatty, taken alone or in alleged combination, do not disclose or suggest coding a view in a 2-dimensional CAD drawing into a format different from the 2-dimensional CAD drawing, as claimed herein.

In the Final Office Action, the Examiner alleges that Yamamoto discloses steps of "b) identifying a view...", "c) identifying a feature..." and "d) extracting properties..." (see p. 6). With respect to step "b) identifying a view...", the Examiner alleges that this feature is disclosed in paragraph 12 line 11-14 and paragraph 58, lines 10-11 of the reference. These sections disclose the generation of 2-dimensional CAD drawings and selection of a graphic element

within a 2-dimensional CAD drawing. There is no disclosure of "identifying a view within the CAD drawing", either in these passages or elsewhere in the reference. The meaning of a 'view' is clear from the Specification of present the application as meaning one of a number of views displayed in the total 2-dimensional CAD drawing (see Specification at paragraphs 77 and Fig. 9b), and not merely a feature within a view. With this terminology, Yamamoto merely allows selection of part of a particular view not identification of a view itself. Furthermore, Yamamoto does not disclose or even suggest that a view is identified for the purpose of coding the view into a format different from the CAD drawing format as claimed herein.

With respect to the step of "c) identifying a feature…", although the Examiner alleges that Yamamoto discloses identifying a feature of a CAD drawing, the Examiner agrees with the Appellant that Yamamoto fails to disclose that the identified feature "comprises a graphic entity or a group of graphic entities in the form of a line or curve," as claimed herein. Accordingly, Yamamoto does not disclose identification of lines or curves, as claimed in the present application.

With respect to the step of "d) extracting properties…," the Examiner alleges that the subject feature is disclosed in paragraph 50 lines 3-4 of the Yamamoto reference. Appellants respectfully disagree. The cited passage discloses extraction of properties of a three dimensional model in order to produce a two dimensional drawing based on the extracted properties. Yamamoto however does not disclose or suggest, as correctly noted by the Examiner, that the extracted properties "include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing," as claimed herein.

With respect to step of "a) filtering the drawing…," the Examiner correctly notes that Yamamoto does not disclose the subject feature. However, the Examiner alleges that this feature is disclosed in Agnes. Appellants respectfully disagree. Agnes teaches using 3-dimensional entity for the production of a 2-dimensional view (see Abstract). The claimed filtering step requires filtering of the 2-dimensional CAD drawing, and has nothing to do with the generation of a view. Not only are the mechanisms used and the intended purpose entirely different, Agnes

does not read onto this feature since it filters a 3-dimensional image not a 2-dimensional CAD drawing, as claimed herein.

Moreover, Agnes gives no suggestion of filtering of a 2-dimensional CAD drawing. Indeed the requirements of filtering a 3-dimensional projection are very different to filtering a 3-dimensional image before creating or generating a 2- dimensional projection. For example, if the 2-dimensional drawings are being created from the 3-dimensional image, the border entities are known by the system at the stage of filtering whereas when removing a border from a 2-dimensional drawing (without any 3-dimensional information) the entities that make up the border have to be identified. Accordingly, these are non trivial problems which are solved by the current invention. Whilst it may be obvious to combine the teaching of Agnes into Yamamoto to filter the 3-dimensional model, it would not be obvious to filter the 2-dimensional CAD drawing.

With respect to steps of "e) generating code bits..." and "f) adding the generated code bits to a view code...," the Examiner alleges that the subject features are disclosed in Beatty. Appellants submit that Beatty appears to have little or no relevance to the invention and does not contain the subject features, as alleged by the Examiner. Rather, Beatty discloses conversion of CAD drawings into raster format for storage and transmission over a communication network (see paragraphs 13 and 50).

In particular, Beatty does not disclose "generating code bits representative of the extracted properties," as claimed herein. In support of his rejection, the Examiner refers to paragraph 41, lines 1-3 of the reference (see Final Office Action at p. 8), which states:

> A programmer "programs" in an object-oriented programming language by writing individual blocks of code each of which creates an object by defining its methods.

This passage relates to program code that refers to instructions executed by the CPU of a computer – having nothing to do with "representing" the extracted vector properties - rather it simply describes the normal characteristics of this approach to programming. The "modeling" referred to here has no relationship with CAD models but relates to the representation of the "use cases" that represent the activities and interactions between a human user and a computer program.

Furthermore, Beatty does not disclose that code bits are "representative of the extracted properties". The Examiner refers to paragraph 50, lines 25-32 (see Final Office Action at p. 8), which states:

> For this reason, the use of vector drawings facilitates the transmission of graphic information over the internet. In one form of the present invention, the modifiable graphical component of the process design data is a vector image created using a CAD program. The use of a CAD program to create vector images enables process engineers to edit the modifiable graphical component of the design data whenever it is deemed necessary to do so.

This is simply a description of the creating of a normal CAD drawing and the benefits that a CAD drawing has over a raster image in economy of transmission. It has no relationship to extraction of vector properties from an existing CAD drawing.

Further, the Examiner states (see Final Office Action at p. 8) that:

> ...internet involves the compression of the data, which obviously involves the generating of code bits representative of vector properties, and the adding of the code bit to a view code for view, which is well known for one having ordinary skill in the art.

Appellants submit that compression of drawings data does not involve generating new code bits representative of vector properties, as claimed herein.

Furthermore, Beatty does not disclose step "g) storing the view code". The examiner points to paragraph 14, line 9-10 of the references in support of his position that the subject feature is disclosed in Beatty. Appellants respectfully submit that the subject passage merely discloses storing of a data record in a database and not "storing of a view code," as claimed herein.

Finally, Appellants note that the Examiner suggests that extracting properties derived from coordinate is obvious because all entries have coordinates. However, just because an entity has coordinates does not mean it is obvious to extract properties derived form those coordinates.

For at least the reasons set forth above, the Appellants submit that Yamamoto, Agnes and Beatty fail to teach or suggest, either implicitly or explicitly, all of the elements of the claimed invention and the Examiner has failed to set forth a *prima facie* case of obviousness with respect to independent claims 1, 20, 23, 49 and 54 and associated dependent claims. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of subject claims as being unpatentable under 35 U.S.C. §103(a) over the cited prior art references.

3. Claim 4 is patentable over the prior art

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto, Agnes and Beatty, as applied to claim 1, and further in view of Tally et al. (US Pat. 6,918,092) and Naka et al. (US Pat. 5,583,975).

Appellants respectfully submit that claim 4 directly depends on and thus incorporates the subject matter of claim 1. Accordingly, claim 4 is patentable over the combination of Yamamoto, Agnes, Beatty and other references for at least the reasons set forth above with respect to claim 1. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of claim 4 as being unpatentable under 35 U.S.C. §103(a).

4. Claim 5 is patentable over the prior art

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto, Agnes, Beatty, Tally, Naka, as applied to claim 4, and further in view of Takahashi et al. (US Pat. 6,256,417).

Appellants respectfully submit that claim 5 indirectly depends on and thus incorporates the subject matter of claim 1. Accordingly, claim 5 is patentable over the combination of Yamamoto, Agnes, Beatty and other references for at least the reasons set forth above with respect to claim 1. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of claim 4 as being unpatentable under 35 U.S.C. §103(a).

5. Claims 8-9 and 27-28 are unpatentable over the prior art

Claims 8-9 and 27-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto, Agnes, Beatty, as applied to claims 7 and 23, and further in view of Ajima et al. (US Pat. 5,390,199).

Appellants respectfully submit that claims 8-9 and 27-28 directly or indirectly depend on and thus incorporate the subject matter of claims 1 and 23, respectively. Accordingly, claims 8-9 and 27-28 are patentable over the combination of Yamamoto, Agnes, Beatty and other references for at least the reasons set forth above with respect to claims 1 and 23. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of claims 8-9 and 27-28 as being unpatentable under 35 U.S.C. §103(a).

6. Claims 10 and 29 are patentable over the prior art

Claims 10 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto, Agnes, Beatty and Ajima, as applied to claims 9 and 28, and further in view of Bloomfield et al. (US Appl. Pub. 2001/0036322).

Appellants respectfully submit that claims 10 and 29 directly or indirectly depend on and thus incorporate the subject matter of claims 1 and 23, respectively. Accordingly, claims 10 and 29 are patentable over the combination of Yamamoto, Agnes, Beatty and other references for at least the reasons set forth above with respect to claims 1 and 23. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of claims 10 and 29 as being unpatentable under 35 U.S.C. §103(a).

7. Claims 13-16 and 32-35 are patentable over the prior art

Claims 13-16 and 32-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto, Agnes, Beatty, as applied to claim 1, and further in view of Inoue et al. (US Appl. Pub. 2003/0149780).

Appellants respectfully submit that claims 13-16 and 32-35 directly or indirectly depend on and thus incorporate the subject matter of claims 1 and 23, respectively. Accordingly, claims 13-16 and 32-35 are patentable over the combination of Yamamoto, Agnes, Beatty and other

references for at least the reasons set forth above with respect to claims 1 and 23. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of claims 13-16 and 32-35 as being unpatentable under 35 U.S.C. §103(a).

       8. Claims 40-43 are patentable are patentable over the prior art

Claims 40-43 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto, Inoue and Ajima.

Appellants respectfully submit that independent claim 40 and associated dependent claims are patentable over the cited references for the reasons set forth below.

Claim 40 is directed to a method of selecting a CAD drawing for retrieval from a database of drawings, the method comprising:

      a) producing a CAD source drawing comprising a source view;

      b) identifying a feature of the source view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

      c) extracting properties of the feature from the CAD source drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

      d) generating code bits, wherein the code bits are representative of the extracted properties;

      e) adding the code bits to a source view code for the source view, wherein the source view code is a coded version of the source view in a different format from the source view;

      f) comparing the source view code with each of a plurality of stored view codes and calculating a similarity index for each stored view code of the plurality; and

      g) selecting the drawing for retrieval from the database on the basis of the similarity index.

Appellants submit that Yamamoto, Inoue and Ajima taken alone or in alleged combination, do not disclose or suggest methods or systems for selecting a CAD drawing for retrieval from a database of drawings, as claimed herein.

As discussed above with respect to the rejection of claim 1, whose step c) through f) are substantially similar to the steps b) through e) of claim 40, the Yamamoto does not disclose the subject features of clam 40.

With respect to step "f) comparing the source view code... and calculating a similarity index...," the Examiner alleges that Yamamoto discloses the subject limitation. In particular, the Examiner alleges that "the similarity index is read as the similar class or appropriate class" disclosed in the Yamamoto reference (see Final Office Action at p. 39). Appellants respectfully submit that similarity index on the claimed inventions is a different concept from the similar or appropriate classes in Yamamoto. Yamamoto does not disclose or even suggest a calculation of a similarity index claimed herein.

Likewise, the Ajima and Inoue references fail to disclose or even suggest use of similarity indexes in view code comparison and, in particular, "comparing the source view code with each of a plurality of stored view codes and calculating a similarity index for each stored view code of the plurality" and "selecting the drawing for retrieval from the database on the basis of the similarity index", as claimed herein.

For at least the reasons set forth above, the Appellants submit that Yamamoto, Inoue and Ajima fail to disclose or suggest, either implicitly or explicitly, all of the elements of the claimed invention and the Examiner has failed to set forth a *prima facie* case of obviousness with respect to claims 40 and associated dependent claims. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of subject claims as being unpatentable under 35 U.S.C. §103(a) over the cited prior art references.

9. Claims 53 and 55 are patentable over the prior art

Independent claims 53 and 55 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto and Beatty.

Appellants respectfully submit that claims 53 and 55 are patentable over the cited references for the reasons set forth below. For convenience, only representative independent claim 53 is reproduced and will be discussed in detail herein. Independent claim 55 recites

substantially similar subject matter as the representative claim 53, and is, thus, patentable over the cited references for substantially similar reasons as claim 53.

Claim 53 is directed to a drawing retrieval system for a 2-dimensional CAD system comprising an input device and a display, and a memory for storing data including a database of drawings, the drawing retrieval system comprising:

> a) an identifier configured to identify a feature of a view in a 2-dimensional CAD drawings, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;
>
> b) an extractor configured to extract properties of the feature, wherein the properties include vector properties associated with the entity or group of entities and are derived from coordinates relating to the feature's position within the drawing;
>
> c) a coder configured to generate code bits and to add the code bits to a view code for the view, wherein the code bits are representative of the extracted properties;
>
> d) the system configured to store the view code in the memory;
>
> e) the system configured to compare (i) a first view code of a first view in a first drawing entered in the input device with (ii) a second view code of a second view a second drawing in the database, to derive a similarity index indicative of a degree of similarity between the first view and the second view; and
>
> f) presenting on the display, on the basis of the similarity index, a list of drawings from which a user can select for retrieval from the database means for retrieving a selected drawing from the database.

Appellants submit that Yamamoto and Beatty, taken alone or in alleged combination, do not disclose or suggest a drawing retrieval system, as claimed herein.

As discussed above with respect to the rejection of claim 1, whose step b) through e) are substantially similar to the steps a) through c) of claim 53, the Yamamoto and Beatty references do not disclose the subject features of clam 53.

With respect to steps "e) ... a second view code of a second view a second drawing in the database, to derive a similarity index indicative of a degree of similarity between the first view and the second view; and f) presenting on the display, on the basis of the similarity index, a list

of drawings from which a user can select for retrieval from the database means for retrieving a selected drawing from the database." The Examiner alleges that Yamamoto discloses the subject limitation. In particular, the Examiner alleges that "the similarity index is read as the similar class or appropriate class" disclosed in the Yamamoto reference (see Final Office Action at pp. 43-44). Appellants respectfully submit that similarity index of the claimed inventions is a different concept from the similar or appropriate classes in Yamamoto. Yamamoto does not disclose or even suggest a calculation of a similarity index as claimed herein.

Betty also fails to disclose or even suggest use of similarity indexes.

For at least the reasons set forth above, the Appellants submit that Yamamoto and Beatty fail to disclose or suggest, either implicitly or explicitly, all of the elements of the claimed invention and the Examiner has failed to set forth a *prima facie* case of obviousness with respect to claims 53 and 55. Accordingly, the Appellants respectfully request this Board to reverse the Examiner with respect to the rejection of subject claims as being unpatentable under 35 U.S.C. §103(a) over the cited prior art references.
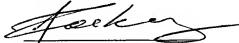
IX.   CONCLUSION

The Appellants respectfully request the Honorable Board to reverse rejections of claims 1-5, 7-10, 13-29, 32-43 and 49-55 of the present application.

                                    Respectfully submitted,

Date: April 27, 2009   ARENT FOX LLP

                                    Michael Fainberg
                                    Attorney for the Appellant
                                    Registration No. 50,441
                                    Direct Tel. No.: (212) 484-3927

                                    Arent Fox LLP
                                    1675 Broadway
                                    New York, New York 10019
                                    Customer No. 38,485

X.   APPENDIX I: COPY OF THE CLAIMS INVOLVED IN THE APPEAL

1. (Previously Presented) A method of coding a view in a 2-dimensional CAD drawing into a format different from the 2-dimensional CAD drawing, the method comprising:

a) filtering the drawing to temporarily remove extraneous material therefrom;

b) identifying a view in the 2-dimensional CAD drawing for coding;

c) identifying a feature of the view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

d) extracting properties of the feature from the CAD drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

e) generating code bits, wherein the code bits are representative of the extracted vector properties;

f) adding the generated code bits to a view code for the view, wherein the view code is a coded version of the view in a different format; and

g) storing the view code.

2. (Previously Presented) A method according to claim 1, further including repeating steps c) to g) for further entities and/or groups of entities in the view.

3. (Previously Presented) A method according to claim 1, wherein the group of graphic entities includes entities having similar properties, entities of a similar type or entities which form the group by virtue of their location or juxtaposition in the view.

4. (Previously Presented) A method according to claim 1, wherein the step of identifying a view for coding comprises defining a boundary enclosing an area which includes the graphic entities in the drawing and dividing the area to define a plurality of view areas, such that each view area includes one or more graphic entities, and no graphic entity is included in more than one area.

5. (Original) A method according to claim 4, wherein the boundary is a bounding rectangle, the step of dividing the boundary to define a plurality of view areas comprising splitting the bounding rectangle to define a plurality of view rectangles.

6. (Original) A method according to claim 4 further including the step of refining the views to be coded by removing all views having less than a predetermined number of entities and passing for coding views having greater than or equal to the predetermined number of entities.

7. (Original) A method according to claim 1, wherein the step of extracting the properties comprises identifying a type for each property from a predefined plurality of property types, each property type having associated items of property data, extracting the property data from the CAD drawing and writing the type and associated property data items to a list.

8. (Original) A method according to claim 7, wherein the step of generating code bits includes setting type code bits corresponding to the property type and setting data code bits corresponding to each item of property data.

9. (Original) A method according to claim 8, wherein the setting of data code bits includes comparing each property data item with a predetermined sub-set of data associated with a given code bit and setting the given data code bit if the property data item falls within the predetermined sub-set.

10. (Original) A method according to claim 9, wherein each code bit has an associated attribute, a method for comparing the property data item with the predetermined sub-set of data associated with the code bit being determined by the attribute.

11. (Original) A method according to claim 10, wherein the attribute associated with the code bit is a predetermined attribute selected from a list of attributes which includes range, numeric and text, having respective associated comparison methods of:

"within range" wherein the code bit is set when the property data item has a value that falls within a predetermined range;

"greater than, less than, equal" wherein a different code bit is set according to whether the property data item has a value greater than, less than or equal to a predetermined value; and

"substring" wherein the code bit is set if there is exact correspondence with a predetermined text substring.

12. (Original) A method according to claim 1, wherein the view code has a predefined structure of code bits, and the drawing has a predetermined class, the code structure being defined differently for drawings having different classes.

13. (Original) A method according to claim 1, wherein the step of storing the view code includes encrypting the view code and storing the encrypted view code.

14. (Original) A method according to claim 13, wherein the step of storing comprises storing the encrypted view code in a catalogue, the catalogue being a portion of the database in which a sub-set of drawings is stored.

15. (Original) A method according to claim 13, wherein the step of storing includes storing encrypted view codes of all views in a drawing.

16. (Original) A method according to claim 15, further including storing at least one of an image file of the drawing, details of a part or component depicted by the drawing, and other information relating to the drawing.

17. (Original) A method according to claim 1, wherein the step of filtering the drawing includes temporarily removing a frame/border of the drawing.

18. (Original) A method according to claim 17, wherein the frame/border is temporarily removed by identifying line entities which make up the frame/border, identifying an inner boundary of the frame/border line entities, and temporarily deleting all graphic entities outside the inner boundary.

19. (Previously Presented) A method according to claim 17 or claim 18, wherein the filter

process includes temporarily removing other entities including any one or more of: dimensions, machining marks, lines of prescribed type or name or color, drawing layers of prescribed name, text with prescribed color, and blocks.

20. (Previously Presented) A method of coding a view from a 3-dimensional CAD model into a format different from the 3-dimensional CAD model, the method comprising:

a) deriving a 2-dimensional view from the 3-dimensional CAD model for coding;

b) identifying a feature of the view, wherein the feature comprises a graphic entity or a group of graphic entities;

c) extracting properties of the feature from the vector-based 3-dimensional CAD model, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

d) generating code bits, wherein the code bits are representative of the extracted properties;

e) adding the code bits to a view code for the view, wherein the view code is a coded version of the view in a different format; and

f) storing the view code.

21. (Original) A method according to claim 20, further including repeating steps b) to e) for further entities and/or groups of entities in the view.

22. (Original) A method according to claim 20, including repeating steps a) to f) for further

views from the 3-dimensional CAD model so as to store a plurality of codes of different views.

23. (Previously Presented) A method of coding a view in a CAD drawing into a format different from a CAD drawing, the method comprising:

a) identifying a feature of the view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

b) extracting properties of the feature from the vector-based CAD drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

c) generating code bits, wherein the code bits are representative of the extracted properties;

d) adding the generated code bits to a view code for the view, wherein the code is a coded version of the view in a different format; and

e) storing the view code.

24. (Original) A method according to claim 23, further including repeating steps a) to d) for further entities and/or groups of entities in the view.

25. (Previously Presented) A method according to claim 23, wherein the group of graphic entities includes entities having similar properties, entities of a similar type or entities which form a group by virtue of their location or juxtaposition in the view.

26. (Original) A method according to claim 23, wherein the step of extracting the properties

comprises identifying a type for each property from a predefined plurality of property types, each property type having associated items of property data, extracting the property data from the CAD drawing and writing the type and associated property data items to a list.

27. (Original) A method according to claim 23, wherein the step of generating code bits includes setting type code bits corresponding to the property type and setting data code bits corresponding to each item of property data.

28. (Original) A method according to claim 27, wherein the setting of data code bits includes comparing each property data item with a predetermined sub-set of data associated with a given code bit and setting the given data code bit if the property data item falls within the predetermined sub-set.

29. (Original) A method according to claim 28, wherein each code bit has an associated attribute, a method for comparing the property data item with the predetermined sub-set of data associated with the code bit being determined by the attribute.

30. (Original) A method according to claim 29, wherein the attribute associated with the code bit is a predetermined attribute selected from a list of attributes which includes range, numeric and text, having respective associated comparison methods of:

"within range" wherein the code bit is set when the property data item has a value that falls within a predetermined range;

"greater than, less than, equal" wherein a different code bit is set according to whether the property data item has a value greater than, less than or equal to a predetermined value; and

"substring" wherein the code bit is set if there is exact correspondence with a predetermined text substring.

31. (Original) A method according to claim 23, wherein the view code has a predefined structure of code bits, and the drawing has a predetermined class, the code structure being defined differently for drawings having different classes.

32. (Original) A method according to claim 23, wherein the step of storing the view code includes encrypting the view code and storing the encrypted view code.

33. (Original) A method according to claim 32, wherein the step of storing comprises storing the encrypted view code in a catalogue, the catalogue being a portion of the database in which a sub-set of drawings is stored.

34. (Original) A method according to claim 32, wherein the step of storing includes storing encrypted view codes of all views in a drawing.

35. (Original) A method according to claim 34, further including storing at least one of an image file of the drawing, details of a part or component depicted by the drawing, and other information relating to the drawing.

36. (Original) A method according to claim 23 including, prior to extracting the vector properties, a filter process for temporarily removing extraneous material from the drawing.

37. (Original) A method according to claim 36, wherein the filter process includes temporarily removing a frame/border of the drawing.

38. (Original) A method according to claim 37, wherein the frame/border is temporarily removed by identifying line entities which make up the frame/border, identifying an inner boundary of the frame/border line entities, and temporarily deleting all graphic entities outside the inner boundary.

39. (Previously Presented) A method according to claim 37, wherein the filter process includes temporarily removing other entities including any one or more of: dimensions, machining marks, lines of prescribed type or name or color, drawing layers of prescribed name, text with prescribed color, and blocks.

40. (Previously Presented) A method of selecting a CAD drawing for retrieval from a database of drawings, the method comprising:

      a) producing a CAD source drawing comprising a source view;

      b) identifying a feature of the source view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

c) extracting properties of the feature from the CAD source drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

d) generating code bits, wherein the code bits are representative of the extracted properties;

e) adding the code bits to a source view code for the source view, wherein the source view code is a coded version of the source view in a different format from the source view;

f) comparing the source view code with each of a plurality of stored view codes and calculating a similarity index for each stored view code of the plurality; and

g) selecting the drawing for retrieval from the database on the basis of the similarity index.

41. (Original) A method according to claim 40, wherein the step of selecting comprises identifying a most similar view of the plurality of views, the most similar view having the highest similarity index, and selecting the drawing which contains the most similar view.

42. (Original) A method according to claim 40, wherein the step of selecting includes the step of displaying a list of drawings for user selection of the drawing, the list being ordered according to the similarity indices of views in the drawings.

43. (Original) A method according to claim 40, wherein the plurality of stored view codes comprises the view codes of views contained in drawings stored in a catalogue, the catalogue being a portion of the database.

44-46. (Withdrawn)

47. (Previously Presented) A method for determining data ranges of a vector property of a graphic entity in a set of drawings, the method comprising:

      a) determining a sample of views from said set of drawings;

      b) selecting a view from said sample of views;

      c) identifying said graphic entity in said view in the form of a line or curve;

      d) extracting said vector property of said graphic entity in said selected view;

      e) repeating steps b) to d) for the other views in the sample of views;

      f) determining a minimum and a maximum value of said extracted vector properties; and

      g) assigning data ranges to said vector properties on the basis of said maximum and minimum values.

48. (Original) A method according to claim 47 wherein the data ranges are assigned to achieve an even distribution of the population of vector property values in each range.

49. (Previously Presented) A method of producing a model code directly from a 3-dimensional CAD model in a format different from the 3-dimensional CAD model, the method comprising:

      a) identifying a feature in the 3-dimensional CAD model comprising a geometrical entity or a group of geometrical entities;

b) extracting properties of the feature from the CAD model, wherein the properties include vector properties associated with the geometrical entity or group of geometrical entities, the vector properties derived from coordinates relating to the feature's position within the model;

c) generating code bits, wherein the code bits are representative of the extracted properties;

d) adding the generated code bits to a model code for the model; and

e) storing the model code.

50. (Previously Presented) A method according to claim 1 wherein the line or curve comprises a straight line, arc or circle.

51. (Previously Presented) A method according to claim 1 wherein the vector properties include coordinate data for specifying the location of a feature.

52. (Previously Presented) A method according to claim 1 wherein the vector properties include coordinate data defining the geometry of a feature, such as line length, orientation, radius.

53. (Previously Presented) A drawing retrieval system for a 2-dimensional CAD system comprising an input device and a display, and a memory for storing data including a database of drawings, the drawing retrieval system comprising:

a) an identifier configured to identify a feature of a view in a 2-dimensional CAD drawings, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

b) an extractor configured to extract properties of the feature, wherein the properties include vector properties associated with the entity or group of entities and are derived from coordinates relating to the feature's position within the drawing;

c) a coder configured to generate code bits and to add the code bits to a view code for the view, wherein the code bits are representative of the extracted properties;

d) the system configured to store the view code in the memory;

e) the system configured to compare (I) a first view code of a first view in a first drawing entered in the input device with (ii) a second view code of a second view a second drawing in the database, to derive a similarity index indicative of a degree of similarity between the first view and the second view; and

f) presenting on the display, on the basis of the similarity index, a list of drawings from which a user can select for retrieval from the database means for retrieving a selected drawing from the database.

54. (Previously Presented) A computer readable medium encoded with software comprising computer readable instructions for controlling a computer to code a view in a CAD drawing, including instructions for coding a view in a 2-Dimensional CAD drawings into a format different from the 2-Dimensional CAD drawing by:

a) filtering said 2-dimensional CAD drawing to temporarily remove extraneous material therefrom;

b) identifying a view within the 2-Dimemensional CAD drawing for coding;

c) identifying a feature of the identified view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve,

    d) extracting properties of the feature from the vector based 2-Dimensional CAD drawing, wherein the properties are vector properties associated with the graphic entity or group of graphic entities and derived from coordinates relating to the feature's position within the drawing;

    e) generating code bits, wherein the code bits are representative of the extracted vector properties;

    f) adding the generated code bits to a view code for the view, wherein the view code is coded version of the view in a different format; and

    g) storing the view code.

55. (Previously Presented) A computer readable medium encoded with software comprising computer readable instructions for controlling a computer to facilitate selection by a user of a CAD drawing for retrieval from a database of CAD drawings, each CAD drawing in the database comprising at least one view that has been coded by:

    a) identifying a view within the 2-Dimemensional CAD drawing for coding;

    b) identifying a feature of the identified view, wherein the feature comprises a graphic entity or a group of graphic entitles in the form of a line or curve;

    c) extracting properties of the feature from the vector based 2-Dimensional CAD drawing, wherein the properties are vector properties associated with the graphic entity or group of graphic entities and derived from co-ordinates relating to the feature's position within the drawing;

    d) generating code bits, wherein the code bits are representative of the extracted vector properties;

e) adding the generated code bits to a view code for the view; wherein the view code is a coded version of the view in a different format,

wherein the computer readable instructions include instructions for:

i) producing a CAD source drawing comprising a source view;

ii) coding the source view in accordance with steps a) to e) above;

iii) comparing the source view code with each of a plurality of stored codes of views in the database of drawings to calculate a similarity index for each stored view code; and

iv) on the basis of the similarity index, presenting a list of drawings from which the user can select for retrieval from the database.

XI.   APPENDIX II: EVIDENCE

-- NONE --

XII.   APPENDIX III: RELATED PROCEEDINGS

-- NONE --